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09/833,202	04/11/2001	Jamcel Menashi	01023	1699

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EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1795

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	09/833,202		MENASHI, JAMEEL	
	<b>Examiner</b>		<b>Art Unit</b>	
	Raymond Alejandro		1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,9,11-13,15,16 and 29-39 is/are pending in the application.
- 4a) Of the above claim(s) 2,9,11-13,15 and 16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

This office action is offered in response to applicant's reply of 12/11/07. Applicant has cancelled all previously pending claims in favor of new claims 29-39. Refer to the foregoing amendment for details of applicant's rebuttal arguments and remarks. However, the present claims (as newly presented) are again rejected over substantially the same grounds of rejection as formulated infra. The application is being finally rejected for the reasons of record.

### ***Election/Restrictions and Claim Disposition***

1. Claims 2, 9, 11-13 and 15-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 03/03/03.
2. Claims 1, 3-8, 10, 14, 17-28 are cancelled.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 29-39 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yu et al 6399202.

The applied reference has a assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This

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rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The instant application is drawn to a fuel cell wherein the claimed inventive concept comprises an electrode comprising at least one modified carbon product having specific group attached thereto. Other limitations include the specific blocking layer and active layer; the binder-free active layer; the specific solid electrolyte membrane; and the specific organic group.

As to claims 29 and 35:

Yu et al disclose gas diffusion electrodes containing modified carbon products wherein the modified carbon product is a carbon product having attached at least one organic group (abstract). It is further disclosed that the Yu et al's invention relates to gas diffusion electrodes such as the ones used in fuel cells and also relates to modified carbon products used to form one or more components of the gas diffusion electrodes (col 3, lines 44-49/ col 3, lines 56-60). It is disclosed that gas diffusion electrodes prepared with modified carbon material have broad applications, one example of a gas diffusion electrode application would be a phosphoric acid type fuel cell using a pair of gas diffusion electrodes or for solid polymer electrolyte fuel cells (col 8, lines 45-50 & line 54). It is noted that Yu et al mentions publications in which they all are incorporated in their entirety by reference (col 8, lines 45-61). In addition, it is mentioned that the present invention can also be used in fuel cells; wherein each of these applications can incorporate the modified carbon material of the present invention in the electrode to obtain the discussed benefits (col 9, lines 3-4 and lines 8-13). *In view of this, it is inherent that a fuel cell*

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*should at least comprise two electrodes and an electrolyte to satisfy mechanical, chemical and kinetic requirements (basic components) so as to obtain a fully functional or working fuel cell which converts electrochemical energy into electrical energy.*

Yu et al directly disclose the gas diffusion electrode including the carbon supports therefor (COL 1, lines 5-12/ COL 15, lines 38-43); and in combination with electrocatalyst particles (COL 1, lines 30-35/ COL 13, lines 15-20/ COL 2, lines 50-65) for the preparation of an active layer material (EXAMPLES 14-15/ COL 12, line 50 to COL 13, line 28).

Yu et al disclose that the modified carbon product can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT). **Examples 12-16** describe the formation of such a layer (EXAMPLES 12-16). *Thus, Yu et al describe with sufficient specificity that carbon-modified product is present in a layered form.*

Yu et al disclose the preference of proton conduction properties (COL 2, line 60-64). *Furthermore, since the specifically recited carbon modified material i.e. (the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting" covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property.*

*Moreover, products of identical chemical composition (i.e. carbon modified materials comprising a carbon product having attached at least one organic group) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.*

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As previously mentioned, in particular, it is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses a gas diffusion electrode for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference). It is further disclosed that a fuel cell is mainly composed of the assembly of a cathode, an anode and in between them a solid electrolyte membrane (col 3, lines 7-11 of Dirven et al'000 which is incorporated by reference).

Further incorporated by reference of the teaching of Dirven et al using carbon supported Pt catalyst or using carbon supporting Pt catalyst particles (col 4, lines 6-15 of Dirven et al'000 which is incorporated by reference, or Yu et al at COL 2, lines 60-65).

It is disclosed that with respect to the active layer, preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type of hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000 patent.* Disclosed is the use of a Co-containing material as a cationic metal catalytic material (COL 13, lines 15-20); as well as Pt (COL 2, lines 50-65).

**Examiner's note:** the limitation *"are attached or adsorbed to the modified carbon product as a product of a reducing of a cationic platinum catalyst complex attached via ion*

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*exchange to the modified carbon product*" has been construed as a product-by-process limitation. Therefore, the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. **In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.** As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious. Therefore, the present claims are unpatentable over a reference that satisfies the claimed compositional or physical or property or structural limitations, and/or a reference that discloses a product made by a process that reasonably substantially comprises every limitation of the claimed process.

As to claim 30:

It is disclosed that the modified carbon product can be used for at least one component of electrodes such as the active layer and/or the blocking layer (abstract). It is disclosed that with respect to air diffusion electrode which is generally used in fuel cells, this type of electrode generally is constructed to have a blocking layer and an active layer (col 3, lines 62-65).

As to claim 31:

It is disclosed that the blocking layer, the active layer or both contain at least one modified carbon product; thus, it is preferred that the modified carbon product comprise at least one carbon product having attached at least one organic group (col 4, lines 31-47).

As to claim 32:

It is disclosed that one preferred advantage of the present invention is the ability to reduce such fluorine containing compounds in the blocking layer or active layer; the proper choice of organic groups attached onto the carbon product to form the modified carbon product can lead to a decrease if not an elimination of fluorine containing compounds (col 7, line 23-35); such fluorine containing compounds typically used are polytetrafluoroethylene and/or perfluoric sulphonic acid polymer (col 7, lines 17-21).

Regarding claim 33:

It is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses gas diffusion electrode with catalyst for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference) wherein the electrolyte is made of an ion exchange polymer or ionomer such as polytetrafluoroethylene (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference). It is taught that solid electrolyte membranes are made of an ion exchange polymer or ionomer because such material is very suited (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference).

As to claim 34:

It is disclosed that said organic group is  $\text{p-C}_6\text{H}_4\text{SO}_3\text{Na}^+$  (claim 9). Thus, this specific ionic organic group comprises the instantly claimed organic group.

As to claims 36-37:

It is disclosed that with respect to the active layer, preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type of hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion

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layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000 patent.*

As to claim 38:

The carbon product is capable of reacting with a diazonium salt to form the carbon product (COL 6, line 65 to COL 7, line 5). Example 5 exemplifies a diazonium salt dual treatment (See EXAMPLE 5).

As to claim 39:

It is disclosed that the organic group is a substituted or unsubstituted sulfohenyl group or salt thereof; specific organic groups having an ionizable functional group forming an ion or cationic groups (COL 5, lines 45-65), the use of aromatic groups included therein is disclosed (COL 6, lines 1-10). The functional groups forming anions are ionizable (col 5, lines 15-16) and it is understood that cationic counter ions can be exchanged to other ions through an ion-exchange process (col 5, lines 42-44). Examples of ionizable functional groups that form cationic groups are disclosed (col 5, lines 15-40; col 5, line 57 to col 6, line 15). *Thus, it should be recognized that the organic group is either a proton-conducting group or electrode-conducting group.*

Therefore, the claims are anticipated by Yu et al. However, if the claims are not anticipated the claims are obvious as it has been held similar products claimed in product-by-

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process limitations are obvious *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972) and *In re Fessmann*, 489 F.2d 742, 744 180 USPQ 324, 326 (CCPA 1974); See also *In re Best*, 195 USPQ 430 (CCPA 1977) [prove that prior art products do not necessarily or inherently possess characteristics] & *Ex parte Gray*, 10 USPQ2d 1922 (BPAI 1989) [needs to show that the claimed process imparts unexpected property or structure] (*Refer to MPEP 2113: Product-by-Process Claims*).

5. (at least) Claims 29 and 38 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tosco et al 6881511.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

As to claim 29:

Tosco et al disclose gas diffusion electrodes containing modified carbon products wherein the modified carbon product is a carbon product having attached a least one organic group; and can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT/COL 4, lines 65-67/COL 7, lines 25-30).

(*Emphasis provided*→) Disclosed is the inclusion of carbon supports for gas diffusion electrodes (COL 1, lines 14-16). Tosco et al disclose the preparation of catalyzed carbon (COL 1,

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lines 26-28) wherein carbon and electrocatalyst particles are combined (COL 1, lines 38-41 & lines 65-67) and a material such as carbon and the proton conductive monomer is provided between the support and the catalyst layer (COL 2, line 65 to COL 3, line 5). **EXAMPLE 15** shows the preparation of a catalyzed active layer material comprising a carbon-supported catalyst (See EXAMPLE 15).

Tosco et al disclose that their invention relates to gas diffusion electrodes such as the ones in metal-air batteries and fuel cells (COL 3, lines 65-67/ COL 4, lines 15-20/ COL 8, line 65 to COL 9, line 10/ COL 9, lines 22-26). *It is noted that the counter-electrode and the electrolyte are fuel cell components which are necessarily presented therein so as to have a functional fuel cell. In view of this, it is inherent that a fuel cell should at least comprise two electrodes and an electrolyte to satisfy mechanical, chemical and kinetic requirements (basic components) so as to obtain a fully functional or working fuel cell which converts electrochemical energy into electrical energy.*

Tosco et al disclose that the modified carbon product can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT). **Examples 12-15** describe the formation of such a layer (EXAMPLES 12-16). *Thus, Tosco et al describe with sufficient specificity that carbon-modified product is present in a layered form.*

Tosco et al disclose the preference of proton conduction properties (COL 2, line 67 to Col 3, line 3). *Furthermore, since the specifically recited carbon modified material i.e. (the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting" covers a very large number of applicable materials which can be used therefor, it is*

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*also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property.*

*Moreover, products of identical chemical composition (i.e. carbon modified materials comprising a carbon product having attached at least one organic group) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.*

Tosco et al disclose the use of a carbon supported catalyst (see **EXAMPLE 15**). Further incorporated by reference is the teaching of Dirven et al 5561000 using carbon supported Pt catalyst or using carbon supporting Pt catalyst particles (col 4, lines 6-15 of Dirven et al'000 which is incorporated by reference; see also Tosco et al at COL 2, lines 26-28 and Col 2, line 56 to COL 3, line 4).

**Examiner's note:** the limitation "*are attached or adsorbed to the modified carbon product as a product of a reducing of a cationic platinum catalyst complex attached via ion exchange to the modified carbon product*" has been construed as a product-by-process limitation. Therefore, the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. **In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.** As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious. Therefore, the present claims are unpatentable over a reference that satisfies the claimed compositional or physical or property

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or structural limitations, and/or a reference that discloses a product made by a process that reasonably substantially comprises every limitation of the claimed process.

On the subject of claim 38:

Tosco et al disclose forming the carbon product by reacting it with a diazonium salt (COL 11, lines 2-5).

Therefore, the claims are anticipated by Tosco et al. However, if the claims are not anticipated the claims are obvious as it has been held similar products claimed in product-by-process limitations are obvious *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972) and *In re Fessmann*, 489 F.2d 742, 744 180 USPQ 324, 326 (CCPA 1974); See also *In re Best*, 195 USPQ 430 (CCPA 1977) [prove that prior art products do not necessarily or inherently possess characteristics] & *Ex parte Gray*, 10 USPQ2d 1922 (BPAI 1989) [needs to show that the claimed process imparts unexpected property or structure] (*Refer to MPEP 2113: Product-by-Process Claims*).

6. (at least) Claim 17 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Swathirajan et al 5316871.

Swathirajan et al disclose membrane- electrode assemblies for electrochemical cells (TITLE), particularly, fuel cells (COL 1, lines 20-23). It is disclosed that fuel cells include first and second electrodes and a solid polymer electrolyte membrane; each electrode is adhered to a respective one of the first and second membrane surfaces (COL 1, lines 42-50) and each electrodes comprise a respective group of finely divided carbon particles, finely divided catalytic particles supported in internal and external surfaces of the carbon particles and a proton

conductive material intermingled with the catalytic and carbon particles (COL 1, lines 51-57).

Divulged is that the carbon groups contains carboxylic groups on the carbon surface (*the organic group*) (COL 12, lines 60-65). Swathirajan et al disclose that is known to attach or bond the organic groups thereto (COL 12, lines 60-65).

Swathirajan et al disclose dispersing platinum Pt catalyst on a carbon material to form a catalyzed carbon (COL 8, lines 59-65/ See EXAMPLE 1).

*(Emphasis provided→)* Swathirajan et al disclose important features of a fuel cell include reaction surfaces, catalyst, ion conducting media (Col 1, lines 33-36). Further disclosed therein are electrodes comprise a respective group of finely divided carbon particles, finely divided catalytic particles supported in internal and external surfaces of the carbon particles and a proton conductive material intermingled with the catalytic and carbon particles (Col 1, Line 51-57).

**Examiner's note:** the limitation "*are attached or adsorbed to the modified carbon product as a product of a reducing of a cationic platinum catalyst complex attached via ion exchange to the modified carbon product*" has been construed as a product-by-process limitation. Therefore, the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. **In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.** As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious. Therefore, the present claims are unpatentable over a reference that satisfies the claimed compositional or physical or property

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or structural limitations, and/or a reference that discloses a product made by a process that reasonably substantially comprises every limitation of the claimed process.

Therefore, the claims are anticipated by Swathirajan et al. However, if the claims are not anticipated the claims are obvious as it has been held similar products claimed in product-by-process limitations are obvious *In re Brown*, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972) and *In re Fessmann*, 489 F.2d 742, 744 180 USPQ 324, 326 (CCPA 1974); See also *In re Best*, 195 USPQ 430 (CCPA 1977) [prove that prior art products do not necessarily or inherently possess characteristics] & *Ex parte Gray*, 10 USPQ2d 1922 (BPAI 1989) [needs to show that the claimed process imparts unexpected property or structure] (Refer to MPEP 2113: *Product-by-Process Claims*).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. (at least) Claims 29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tosco et al 6881511 in view of Watakabe et al 2003/0198854.

As to claim 29:

Tosco et al disclose gas diffusion electrodes containing modified carbon products wherein the modified carbon product is a carbon product having attached a least one organic group; and can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT/COL 4, lines 65-67/COL 7, lines 25-30).

(*Emphasis provided*→) Disclosed is the inclusion of carbon supports for gas diffusion electrodes (COL 1, lines 14-16). Tosco et al disclose the preparation of catalyzed carbon (COL 1, lines 26-28) wherein carbon and electrocatalyst particles are combined (COL 1, lines 38-41 & lines 65-67) and a material such as carbon and the proton conductive monomer is provided between the support and the catalyst layer (COL 2, line 65 to COL 3, line 5). **EXAMPLE 15** shows the preparation of a catalyzed active layer material comprising a carbon-supported catalyst (See EXAMPLE 15).

Tosco et al disclose that their invention relates to gas diffusion electrodes such as the ones in metal-air batteries and fuel cells (COL 3, lines 65-67/ COL 4, lines 15-20/ COL 8, line 65 to COL 9, line 10/ COL 9, lines 22-26). *It is noted that the counter-electrode and the electrolyte are fuel cell components which are necessarily presented therein so as to have a functional fuel cell. In view of this, it is inherent that a fuel cell should at least comprise two electrodes and an electrolyte to satisfy mechanical, chemical and kinetic requirements (basic*

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*components) so as to obtain a fully functional or working fuel cell which converts electrochemical energy into electrical energy.*

Tosco et al disclose that the modified carbon product can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT).

**Examples 12-15** describe the formation of such a layer (EXAMPLES 12-16). *Thus, Tosco et al describe with sufficient specificity that carbon-modified product is present in a layered form.*

Tosco et al disclose the preference of proton conduction properties (COL 2, line 67 to Col 3, line 3). *Furthermore, since the specifically recited carbon modified material i.e. (the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting" covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property.*

*Moreover, products of identical chemical composition (i.e. carbon modified materials comprising a carbon product having attached at least one organic group) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.*

Tosco et al disclose the use of a carbon supported catalyst (see **EXAMPLE 15**). Further incorporated by reference is the teaching of Dirven et al 5561000 using carbon supported Pt catalyst or using carbon supporting Pt catalyst particles (col 4, lines 6-15 of Dirven et al'000 which is incorporated by reference; see also Tosco et al at COL 2, lines 26-28 and Col 2, line 56 to COL 3, line 4).

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**Examiner's note:** the limitation "*are attached or adsorbed to the modified carbon product as a product of a reducing of a cationic platinum catalyst complex attached via ion exchange to the modified carbon product*" has been construed as a product-by-process limitation. Therefore, the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. **In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.** As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious. Therefore, the present claims are unpatentable over a reference that satisfies the claimed compositional or physical or property or structural limitations, and/or a reference that discloses a product made by a process that reasonably substantially comprises every limitation of the claimed process.

On the subject of claim 38:

Tosco et al disclose forming the carbon product by reacting it with a diazonium salt (COL 11, lines 2-5).

Tosco et al describe a fuel cell according to the above-mentioned details. However, (*assuming arguendo that*) the preceding prior art reference does not expressly disclose Pt catalyst particles (*emphasis added → a point not admitted by the Examiner, see item 5 supra, this is to address any potential assertion by the applicant that the incorporation by reference does not properly cover the claimed limitations*)

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Watakabe et al disclose that is known in the art to use Pt-supporting carbon as a catalytic material (P0152) in fuel cells comprising a membrane electrolyte, a cathode and an anode (ABSTRACT).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in pertinent art at the time the invention was made to use Pt catalyst particles in the carbon-modified layer of Tosco et al as taught by Watakabe et al as Watakabe et al teaches that a gas diffusion electrode comprising Pt catalyst layer supported by carbon provides a fuel cell exhibiting satisfactory terminal voltages and improved performance. *In this instant, Watakabe et al directly teach a layer in a gas diffusion electrode structure a carbon-supported Pt catalyst for performing chemical reactions in the fuel cell.*

10. Claims 29-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu et al 6399202 in view of Watakabe et al 2003/0198854.

As to claims 29 and 35:

Yu et al disclose gas diffusion electrodes containing modified carbon products wherein the modified carbon product is a carbon product having attached at least one organic group (abstract). It is further disclosed that the Yu et al's invention relates to gas diffusion electrodes such as the ones used in fuel cells and also relates to modified carbon products used to form one or more components of the gas diffusion electrodes (col 3, lines 44-49/ col 3, lines 56-60). It is disclosed that gas diffusion electrodes prepared with modified carbon material have broad applications, one example of a gas diffusion electrode application would be a phosphoric acid type fuel cell using a pair of gas diffusion electrodes or for solid polymer electrolyte fuel cells (col 8, lines 45-50 & line 54). It is noted that Yu et al mentions publications in which they all are

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incorporated in their entirety by reference (col 8, lines 45-61). In addition, it is mentioned that the present invention can also be used in fuel cells; wherein each of these applications can incorporate the modified carbon material of the present invention in the electrode to obtain the discussed benefits (col 9, lines 3-4 and lines 8-13). *In view of this, it is inherent that a fuel cell should at least comprise two electrodes and an electrolyte to satisfy mechanical, chemical and kinetic requirements (basic components) so as to obtain a fully functional or working fuel cell which converts electrochemical energy into electrical energy.*

Yu et al directly disclose the gas diffusion electrode including the carbon supports therefor (COL 1, lines 5-12/ COL 15, lines 38-43); and in combination with electrocatalyst particles (COL 1, lines 30-35/ COL 13, lines 15-20/ COL 2, lines 50-65) for the preparation of an active layer material (EXAMPLES 14-15/ COL 12, line 50 to COL 13, line 28).

Yu et al disclose that the modified carbon product can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT). Examples 12-16 describe the formation of such a layer (EXAMPLES 12-16). *Thus, Yu et al describe with sufficient specificity that carbon-modified product is present in a layered form.*

Yu et al disclose the preference of proton conduction properties (COL 2, line 60-64). *Furthermore, since the specifically recited carbon modified material i.e. (the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting" covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property.*

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*Moreover, products of identical chemical composition (i.e. carbon modified materials comprising a carbon product having attached at least one organic group) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.*

As previously mentioned, in particular, it is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses a gas diffusion electrode for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference). It is further disclosed that a fuel cell is mainly composed of the assembly of a cathode, an anode and in between them a solid electrolyte membrane (col 3, lines 7-11 of Dirven et al'000 which is incorporated by reference).

Further incorporated by reference of the teaching of Dirven et al using carbon supported Pt catalyst or using carbon supporting Pt catalyst particles (col 4, lines 6-15 of Dirven et al'000 which is incorporated by reference, or Yu et al at COL 2, lines 60-65).

It is disclosed that with respect to the active layer, preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type of hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000*

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*patent*. Disclosed is the use of a Co-containing material as a cationic metal catalytic material (COL 13, lines 15-20); as well as Pt (COL 2, lines 50-65).

**Examiner's note:** the limitation "*are attached or adsorbed to the modified carbon product as a product of a reducing of a cationic platinum catalyst complex attached via ion exchange to the modified carbon product*" has been construed as a product-by-process limitation. Therefore, the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. **In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.** As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious. Therefore, the present claims are unpatentable over a reference that satisfies the claimed compositional or physical or property or structural limitations, and/or a reference that discloses a product made by a process that reasonably substantially comprises every limitation of the claimed process.

As to claim 30:

It is disclosed that the modified carbon product can be used for at least one component of electrodes such as the active layer and/or the blocking layer (abstract). It is disclosed that with respect to air diffusion electrode which is generally used in fuel cells, this type of electrode generally is constructed to have a blocking layer and an active layer (col 3, lines 62-65).

As to claim 31:

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It is disclosed that the blocking layer, the active layer or both contain at least one modified carbon product; thus, it is preferred that the modified carbon product comprise at least one carbon product having attached at least one organic group (col 4, lines 31-47).

As to claim 32:

It is disclosed that one preferred advantage of the present invention is the ability to reduce such fluorine containing compounds in the blocking layer or active layer; the proper choice of organic groups attached onto the carbon product to form the modified carbon product can lead to a decrease if not an elimination of fluorine containing compounds (col 7, line 23-35); such fluorine containing compounds typically used are polytetrafluoroethylene and/or perfluoric sulphonic acid polymer (col 7, lines 17-21).

Regarding claim 33:

It is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses gas diffusion electrode with catalyst for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference) wherein the electrolyte is made of an ion exchange polymer or ionomer such as polytetrafluoroethylene (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference). It is taught that solid electrolyte membranes are made of an ion exchange polymer or ionomer because such material is very suited (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference).

As to claim 34:

It is disclosed that said organic group is  $\text{p-C}_6\text{H}_4\text{SO}_3\text{Na}^+$  (claim 9). Thus, this specific ionic organic group comprises the instantly claimed organic group.

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As to claims 36-37:

It is disclosed that with respect to the active layer, preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type of hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000 patent.*

As to claim 38:

The carbon product is capable of reacting with a diazonium salt to form the carbon product (COL 6, line 65 to COL 7, line 5). Example 5 exemplifies a diazonium salt dual treatment (See EXAMPLE 5).

As to claim 39:

It is disclosed that the organic group is a substituted or unsubstituted sulfophenyl group or salt thereof; specific organic groups having an ionizable functional group forming an ion or cationic groups (COL 5, lines 45-65), the use of aromatic groups included therein is disclosed (COL 6, lines 1-10). The functional groups forming anions are ionizable (col 5, lines 15-16) and it is understood that cationic counter ions can be exchanged to other ions through an ion-exchange process (col 5, lines 42-44). Examples of ionizable functional groups that form cationic groups are disclosed (col 5, lines 15-40; col 5, line 57 to col 6, line 15). *Thus, it should be*

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*recognized that the organic group is either a proton-conducting group or electrode-conducting group.*

Yu et al describe a fuel cell according to the above-mentioned details. However, *(assuming arguendo that)* the preceding prior art reference does not expressly disclose Pt catalyst particles *(emphasis added → a point not admitted by the Examiner, see item 4 supra, this is to address any potential assertion by the applicant that the incorporation by reference does not properly cover the claimed limitations)*

Watakabe et al disclose that is known in the art to use Pt-supporting carbon as a catalytic material (P0152) in fuel cells comprising a membrane electrolyte, a cathode and an anode (ABSTRACT).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in pertinent art at the time the invention was made to use Pt catalyst particles in the carbon-modified layer of Yu et al as taught by Watakabe et al as Watakabe et al teaches that a gas diffusion electrode comprising Pt catalyst layer supported by carbon provides a fuel cell exhibiting satisfactory terminal voltages and improved performance. *In this instant, Watakabe et al directly teach a layer in a gas diffusion electrode structure a carbon-supported Pt catalyst for performing chemical reactions in the fuel cell.*

#### ***Response to Arguments***

4. Applicant's arguments with respect to NEW claims 29-39 have been considered but are moot in view of the new ground(s) of rejection.

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11. Although believed unnecessary due to the new grounds of rejection, the Examiner wishes to briefly address certain arguments raised by applicant in support of the patentability of his invention.

12. Applicant amended the claims to include the specific limitation: "*are attached or adsorbed to the modified carbon product as a product of a reducing of a cationic platinum catalyst complex attached via ion exchange to the modified carbon product*". However, this newly added limitation has been construed as a product-by-process limitation. Therefore, the product itself does not depend on the process of making it. Accordingly, in a product-by-process claim, the patentability of a product does not depend on its method of production. In that, it is further noted that the product in the instant claims is the same as or obvious over the product of the prior art. **In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.** As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious. Therefore, the present claims are unpatentable over a reference that satisfies the claimed compositional or physical or property or structural limitations, and/or a reference that discloses a product made by a process that reasonably substantially comprises every limitation of the claimed process.

5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a) *the specific functional group -C<sub>6</sub>H<sub>4</sub>SO<sub>3</sub> is not recited in independent claim 29*; nor is the limitation "*in very close proximity to the organic groups, or extremely close proximity to each other*"), are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification,

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limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant has made the allegation that the foregoing limitations are part of the invention recited in independent claim 29 (see the 12/11/07 amendment at pages 7, 12 and 13). The Examiner disagrees.

13. The Examiner also largely disagrees with applicant's interpretation or characterization of the teachings that either Yu et al or Tosco et al have incorporated by reference as part of their disclosure, and to further their inventive concept. The Examiner does not agree with the way applicant is proposing to either interpret or rely upon the teachings of Dirven et al 5561000. Applicant is kindly requisitioned to draw the Examiner's attention to ANY specific passage in MPEP guidelines showing that the reliance on Dirven et al 5561000 as postulated by the Examiner is fatally inappropriate or inapposite as the Examiner is currently unaware of any express statement contrary to his position.

14. With respect to Yu et al'202, applicant has contended that the recitation "*wherein said catalyst particles are attached or absorbed onto the modified carbon product*" distinguishes over the prior art of record because what the prior art teaches is "*a physical mixture*" instead of the catalyst particles attached/absorbed onto the carbon product. Without deviation from theory or conventional knowledge, the examiner replies that the regular definition of the terms "*attached*" (attach) and/or "*absorbed*" (absorb) as per Merriam-Webster's Collegiate Dictionary (10<sup>th</sup> Edition) is, for the term "attach", to bring into an association or to make fast, among other; for the term "absorb", to take in and make part of an existent whole, to suck up or take up, or to engage or engross wholly. Therefore, literal claim interpretation of the present claim language in view of standard definitions of the foregoing terms does not exclude a "physical mixture".

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Simply put, the present claim language permits to define the attachment or absorbing (absorption) as to bring into association the catalyst particles and the carbon product; or to take in the catalyst particles and make them part of the carbon product, and the likes. Therefore, the present claims do not necessarily require a chemical bond or mixture between the catalyst material and the carbon product as implicitly argued by the applicant. The same applies equally to applicant's arguments concerning Tosco et al'511 and Swathirajan et al'871. All in all, the Examiner contends that the prior art of record clearly disclose catalyst particles in close association with, attached to, absorbed by or taken-and-made part of the carbon product as instantly claimed by the applicant.

15. The gist of applicant's arguments is premised on the assertion that the prior art of record does not disclose "*A modified carbon product having attached at least one organic group that is proton-conducting*". However, this assertion is respectfully disagreed with. For instance, both Yu et al and Tosco et al disclose the preference of proton conduction properties in their gas diffusion-catalytic support bodies as presented supra. Additionally, since the specifically recited carbon modified material i.e. ("*the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting*") covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property. Moreover, products of identical chemical composition (*i.e. carbon modified materials comprising a carbon product having attached at least one organic group*) can not have

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mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.

16. Applicant appears to conveniently characterize Yu et al's and Tosco et al' active layers by stating that such active layers are not the same as applicant's active layer because Yu et al and Tosco et al's active layers were subject to a specific pyrolysis treatment as shown in their respective EXAMPLES 14-15, thereby, not having organic groups present therein or proton conducting properties. In response, the examiner firstly asserts that applicant's claimed invention are entirely silent about the process-of-making the specific active layer so as to fairly contend that at least claim 17 circumscribes "a product-by-process" limitation. In this event, applicant's arguments concerning this issue are completely irrelevant, inaccurate and non-commensurate in scope with the present claim language. Also, the examiner secondly asserts that assuming for argument purposes that such is the case (*i.e. that applicant's claimed invention includes a product-process limitation, a point clearly not conceded by the examiner*), there is still no objective evidence to show a difference in terms of structure or composition between the active layer at hand and the disclosed active layers; and/or unexpected results to rebut the prima-facie case of anticipation as it would apply to inventions incorporating a product-by-process clause (*See 2113 Product-by-Process Claims*).

17. As far as applicant's arguments against the rejection under Section 103 based upon Watakabe et al, note that it is unnecessary that such a reference specifically teaches or discloses what applicant is contending (*i.e. do not use a modified carbon product as part of the active layer*). Watakabe et al was cited to show that prior art contemplates gas diffusion layers or layers on the gas diffusion electrode having the claimed thickness per se, and since Watakabe et al

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disclose so, such a limitation has been satisfactorily met. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. (*Emphasis added*→) Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

18. In response to applicant's arguments concerning the adsorbed/attached Pt catalyst particles, it is useful to note that Yu et al disclose that preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type of hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000 patent.* In addition to that, disclosed is the use of a Co-containing material as a cationic metal catalytic material (COL 13, lines 15-20); as well as Pt (COL 2, lines 50-65).

19. In response to applicant's argument that Swathirajan et al'871 only indicates an oxidized surface and does not indicate an attached organic group, it is contended that the prior art reference discloses the use of carbon groups containing carboxylic groups on the carbon surface (*the organic group*) (Swathirajan et al'871-COL 12, lines 60-65). Swathirajan et al further disclose that is known to attach or bond the organic groups thereto (COL 12, lines 60-65).

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Therefore, Swathirajan et al'871 readily envision attaching or bonding an organic group such as a carboxylic group to the surface of the carbon material.

### *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond Alejandro  
Primary Examiner  
Art Unit 1795



RAYMOND ALEJANDRO  
PRIMARY EXAMINER